



State of Indiana

Integrated Public Safety Commission

Federal Communications Commission Mandated

800 MHz Rebanding Project

Agenda

<u>Welcome</u> ------ Dave Smith, Director of Implementation and Integration, Integrated Public Safety Commission, Project Hoosier SAFE-T

Rebanding History ----- Sandra Black, President, EMR Consulting, Inc.

IPSC Rebanding Introduction Steve Skinner, IPSC Rebanding Coordinator

IPSC Rebanding Process ---- Bob Black, Project Manager, EMR Consulting, Inc.

IPSC Legal/Contract ----- Robert Schwaninger, President, Schwaninger & Associates

Q&A

Form Completion



Welcome

Dave Smith
Director of Implementation and Integration
State of Indiana
Integrated Public Safety Commission
Project Hoosier SAFE-T



800 MHz Transition Executive Summary

- Nextel caused nationwide interference with 800 MHz Public Safety wireless communication networks
- FCC and industry studied issue for four years
- FCC issued Report and Order requiring all Public Safety networks to transition to new frequencies over next 36 months
- Nextel to pay for all reasonable costs of transition
- Plan and costs to be submitted to Nextel and an FCC appointed "Transition Administrator" for approval
- State of Indiana is in the "1st wave" of transition



800 MHz Transition Executive Summary

- You are directly involved in the <u>mandatory</u> rebanding project as users of the statewide system.
- Your participation is mandatory to ensure future, uninterrupted use of the statewide system.



Rebanding History

Sandra Black
President
EMR Consulting, Inc.



800 MHz Transition History

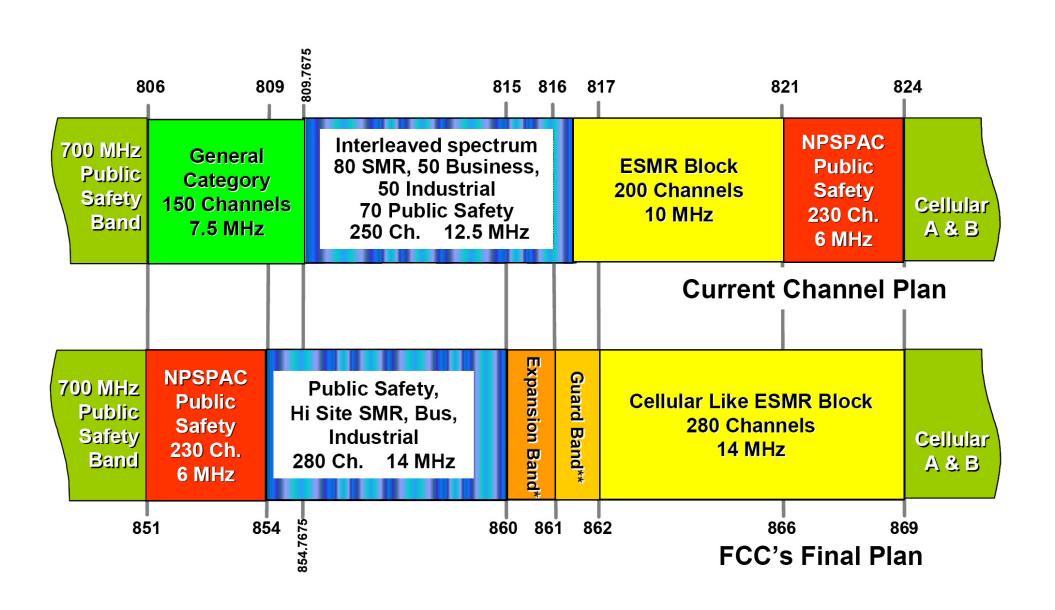
- 1999 Interference with "Commercial" Mobile Radio systems reported by Public Safety 800 MHz users in various cities
- Dec 2000 APCO, PSWN, CTIA, Nextel, Motorola issue "Best Practices Guide" outlining ways to remedy interference in 800 MHz band
- Aug 2001 APCO creates Project 39 to develop solutions to remedy interference. APCO creates "online" interference reporting system
- Nov 2001 Nextel proposes reallocation of 800 MHz band
- Aug 2002 "Consensus Plan" proposes reallocation of 800 MHz band
- Aug 2002 to Aug 2004 multiple parties submit multiple documents for and against the proposed reallocation of 800 MHz band
- Aug 2004 FCC issues Report & Order FCC 04-168 mandating 800 MHz band reconfiguration

FCC Report & Order 04-168

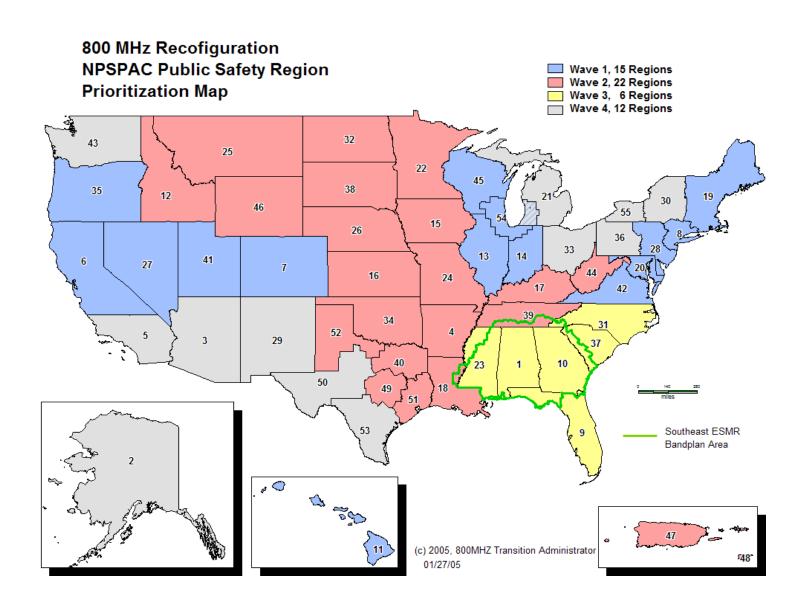
- Nextel gets 14 MHz of upper end of 800 MHz band
- Nextel gets 10 MHz of 1.9 GHz band
- Nextel commits \$2.5B irrevocable letter of credit to fund relocation of incumbent licensees in 800 MHz band
- Public Safety moved from upper end to lower end of 800 MHz band



800 MHz Band Plan



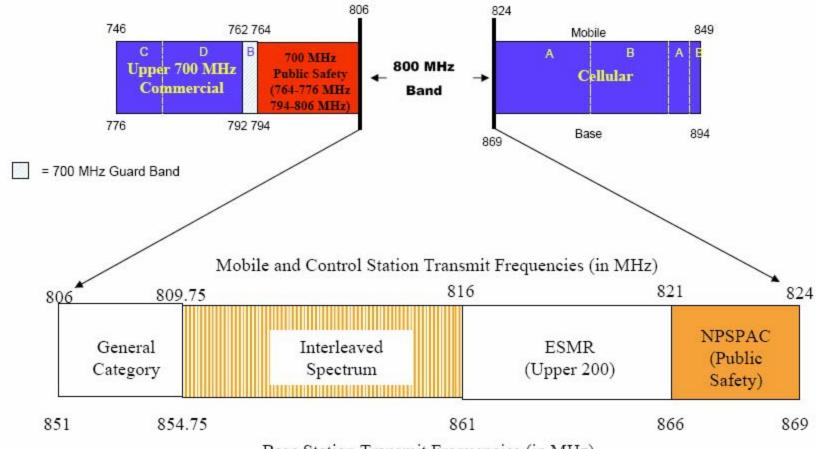
Prioritization Waves



800 MHz Rebanding Implementation Schedule

18 Months

	2005 Q3	Q4	2006 Q1	Q2	Q3	Q4	2007 Q1	Q2	Q3	Q4	2008 Q1	Q2
Wave 1 1-120 Negotiations												
Wave 1 1-120 Reconfiguration												
Wave 1 NPSPAC Negotiations			PN W	indow								
Wave 1 NPSPAC												
Wave 2 1-120 Negotiations												
Wave 2 1-120 Reconfiguration												
Wave 2 NPSPAC Negotiations				PN W	indow							
Wave 2 NPSPAC					88888							
Wave 3 1-120 Negotiations												
Wave 3 1-120 Reconfiguration												
Wave 3 NPSPAC Negotiations					PN W	indow						
Wave 3 NPSPAC												
Wave 4 1-120 Negotiations			*									
Wave 4 1-120 Reconfiguration		Actual da	tes									
Wave 4 NPSPAC Negotiations		end on tr				PN W	indow					
Wave 4 NPSPAC												



Base Station Transmit Frequencies (in MHz)

General Category -7.5 MHz

150 Channels

Licensed by EA Blocks of 25 channels (SMR)

Some Incumbent Operators Remain

ESMR/Upper 200 - 10 MHz

200 Channels

Licensed by EA

Non EA incumbents are currently undergoing mandatory relocation NPSPAC - 6 MHz

225 Channels @ 12.5 kHz spacing

5 Channels @ 25 kHz spacing

5 Mutual Aid Channels

Interleaved Spectrum -12.5 MHz

250 Channels

80 SMR Channels

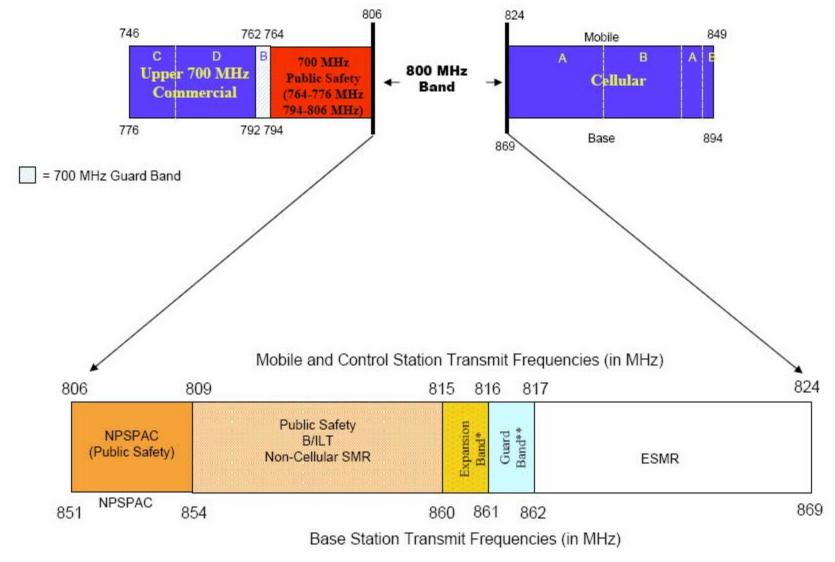
(Licensed by EA, Some Incumbent Operators Remain)

70 Public Safety Channels

50 Business Channels

50 Industrial Land Transportation Channels

PRE-RECONFIGURATION BAND PLAN



*No public safety system will be required to remain in or relocate to the Expansion Band; although they may do so if they choose.

**No public safety or CII licensee may be involuntarily relocated to occupy the Guard Band.

Indiana Integrated Public Safety Commission 800 MHz Rebanding Introduction

Steve Skinner
State of Indiana
Integrated Public Safety Commission
Rebanding Coordinator



The Problem

- Nextel's wireless network interfered with Public Safety 800 MHz systems.
- FCC studied problem for 4 years.
- FCC issued Report and Order requiring
 - all 800 MHz licensees in affected band move to new channels in 36 months
 - Nextel to pay for the cost of moving
- State of Indiana transition to be completed by Dec 2007
- All 28,000 + radios and 130 + sites on the Indiana system plus the 8
 Department of Correction standalone systems must either be
 reprogrammed, retuned, or replaced.
- Construction of the system will continue while the transition occurs.
- Logistical nightmare "changing a tire while the vehicle is traveling 70 mph".



The Solution

- Form a team consisting of stakeholders and industry experts to tackle the problem
- Communicate, communicate, communicate
- Plan the work, work the plan.



State of Indiana 800 MHz Rebanding Team

- All City, County, State, and Federal Agencies using the Indiana statewide network
- Dave Smith IPSC Project Director
- Steve Skinner IPSC 800 MHz Rebanding Coordinator
- Sandra Black EMR Consulting, Inc., President
- Bob Black EMR Consulting, Inc., 800 MHz Senior Project Manager
- Robert Schwaninger Schwaninger & Associates, 800 MHz Legal Counsel
- Ron Elwell Motorola Rebanding Strategist
- Joe Heersche EF Johnson

Cooperation and Teamwork – the key to success!



The Goal

- Migrate to the new channels with <u>no</u> interruption in communications.
- Minimize the disruption to daily operations.
- Receive compensation from Nextel for all necessary rebanding costs.
- Obtain a post-transition system with coverage equivalent to the pre-transition system.



Indiana Integrated Public Safety Commission 800 MHz Rebanding Process

Bob Black
Project Manager
EMR Consulting, Inc.



The Process

- Phase 1 Planning Phase
- Phase 2 Transition Phase



Phase 1 - Planning

- 1. Prepare and submit "Request for Planning Funding" to Nextel and the Transition Administrator and negotiate a Planning Funding Agreement to obtain funding for the Planning Phase.
- 2. Communicate with all users purpose of today's meeting.
- 3. Inventory all equipment.
- 4. Obtain internal labor rates.
- 5. Obtain quotes from Motorola and EF Johnson.
- 6. Develop coverage testing routes.
- 7. Analyze new channels.
- 8. Compile and document all Transition Costs.
- 9. Prepare Transition Plan and negotiate a Frequency Relocation Agreement with Nextel.



Phase 1 – Planning Planning Funding Agreement

- Planning Funding Agreement has been executed between State of Indiana and Nextel.
- PFA covers scope of work to develop the plan, cost, and schedule for the actual transition.
- Detailed record keeping required for reimbursement of costs.



Phase 1 - Planning Communication Plan

- Six Regional Planning Meetings are being held to communicate with all user agencies.
- 800 MHz Rebanding Information Tab has been added to the IPSC website. Access to:
 - Forms
 - Presentations
 - Schedules
 - Contact Information
- 800 MHz Rebanding Packages have been mailed to all User Agencies



Phase 1 – Planning Inventory

- The Inventory of all user equipment forms the foundation for the entire Rebanding Process.
- More than 700 different State, City, County, Federal Agencies use the IPSC network
- More than 28,000 radios
- IPSC has a record of all radios that are logged onto the system.
 - This information is limited to quantity; models and features not part of the IPSC database.
- The inventory of your agency's radios can be performed by:
 - The Agency
 - EMR Consulting
- We need to know who you want to use (but before you answer)



Phase 1 – Planning Inventory Process

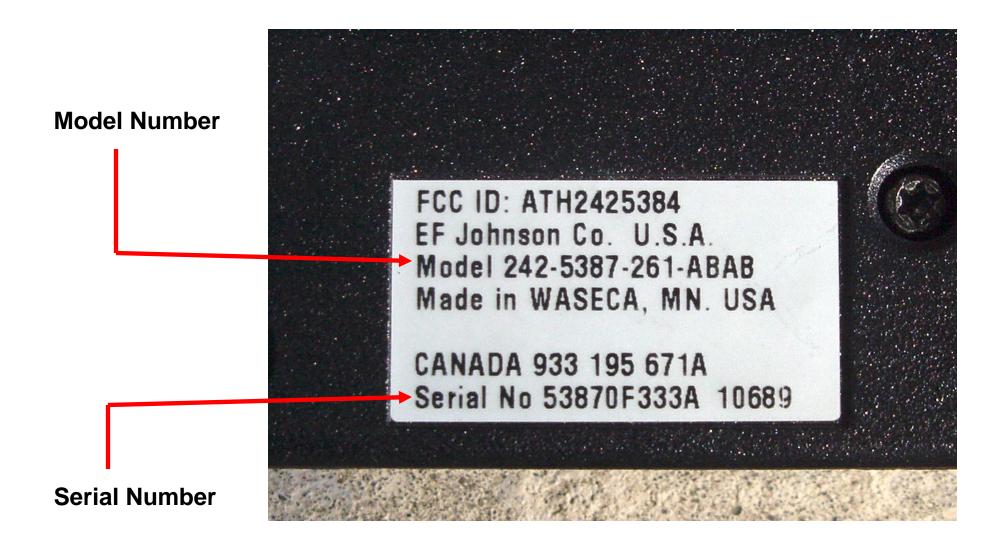
- IPSC database is divided by County. Unfortunately the database may not include which individual agency within the County owns a particular radio.
- Each County will receive their section of the database to:
 - 1. Verify the quantity (mobiles, portables, control stations, consoles).
 - 2. Document each radio's model and serial numbers.
 - 3. Based on this information we will tell you what radios will be replaced.
 - 4. For radios that will be replaced, document every accessory (battery, charger, lapel mics, carrying cases etc.) associated with that radio.
 - 5. Input that information into the spreadsheet.



5100 Series 800 MHz Portable Radio (Label is Under the Battery)



5300 Series 800 MHz Mobile Radio



Phase 1 – Planning Inventory; cont'd

- Unique situations to be considered:
 - Dual programmed radios (user agency and IPSC network)
 - Site equipment that user agencies have added to the system beyond the IPSC network



Phase 1 – Planning Internal Labor Rates/Reimbursement

- Nextel will reimburse all reasonable and prudent costs associated with rebanding.
- Direct payments are made from Nextel to the Licensee (State of Indiana)
- All Agencies will be treated as a "Vendor" and must submit invoices to IPSC for approval and forwarding to Nextel for payment.
- Agency (Vendor) payment process:
 - Submit "Payee Setup Form" to Nextel Finance.
 - Submit invoice to the State of Indiana (IPSC) for work performed.
 - Submit "Incumbent Acknowledgement Form" with invoice.
 - IPSC signs "Incumbent Acknowledgement Form" and transmits this to Nextel Finance.
 - Nextel issues check or Electronic Fund Transfer to Agency.
- Agency must document internal labor rate.





Payee Setup Form for 800 MHz Rebanding Only

PLEASE FAX BACK TO (866) 221-6990

6 9			- 0.
Incumbent Name:			Date:
Vendor Name:			
Tax ID or Social Security #:			
Check Appropriate Box for Tax Status:	Individual/Sole Proprietor Federal/State/Local Gov't Age	Corporation	Parinership
Remit to Address: (Same as on Invoka)	1331 H Street, NW, Suite 500		
Oty:		State:	Zip Code:
Physical Address: (for belieny of Ouemigh Paymen))		10.00 Vo	· ·
City:		State:	Zip Code:
Accounts Receivable (A/R) Contact Name:		Phone No:	Fax No:
A/R Email Address:		0.000	<u>'</u>
 Taminol subled loback up Withholding to tallus lonepor lati Interestrof dubberds or (c) Tamina II & person (Including a III), resoluting a Usurus cross dentification in chruction of You must cross diution do conyour low return. For read es tale 	iom is the correct tempayer indentification rum necesses: (\$) I am exempt from bestup without the Rishes notified me that I am no lorger tibent alternand til S. companies; out item 2 about if you have no lifed the IRS	iding, or (b) I have no libean no libed by sublect ib backup withholding; and that you are currently sublect libback tyage interest paid , acquisition or aba	y he IRS had I am sublect to backup withholding as a result of a up withholding because you have falled to report all interestand of dominant of secured property, cancel all on orbitals, contributors to
Bank Account Informat	ion:		
Bank Name:	Name	on Account:	
Bank Address:	Bank P	hone No:	
Account Number:		Routing No:	
Further Credit Informat	ion:		
l acknowledge that the bank i	rformation provided above is a	accurate.	
Payee Signature:	16 66	Date:	
Print Name:		Phone No:	
For Sprint/Nextel Office Use Entered By:	- CONT.	People Soft Vendor #:	*

INCUMBENT ACKNOWLEDGEMENT

Date:					
t Nextel):					
of FRA):					
Incumbent Contact Address:					
Date of Acceptance of Good/Services by Incumbent	Cost				
TOTAL					
	Date of Acceptance of Good/Services by Incumbent				

PLEASE RETURN TO SPRINT NEXTEL ONLY VIA FAX: (866)-221-6990

Phase 1 – Planning Internal Labor Rates

- When no established market based rate can be substantiated, incumbent internal labor incurred to support 800 MHz reconfiguration is reimbursable at base hourly rates plus reasonable overhead, whether the time is incurred during normal business hours or overtime hours, subject to the following criteria:
 - Base hourly rates for salaried employees are determined by dividing an employee's annual salary by 2,080 hours. Base hourly rates for hourly employees are the rates paid by the employer to the employee. These rates should be supported by payroll and human resources records. Licensees should be prepared to provide the records to the TA upon request. The TA will consider an entity's previously established and documented alternatives to calculating base hourly rates, so long as those alternatives are reasonable and prudent.
 - Overhead rates are based on established internal rates and calculations supported by payroll, human resources and accounting records. Such overhead should be reasonable and prudent, and licensees should be prepared to provide the records to the TA upon request. Additionally, licensees should provide calculations to the TA for complex overhead rate structures when submitting cost estimates for review and approval. Sprint Nextel will require actual cost documentation, including calculations of actual licensee labor and overhead rates during the reconciliation process, which occurs upon completion of reconfiguration.
 - Overtime, loaded with overhead is reimbursable, if the employer pays overtime. If the employer does not pay overtime, it will not be an allowable cost.
 - The base and overhead costs are incremental to the licensee, i.e., the costs would not have been incurred "but for" the FCC mandate to reconfigure 800 MHz systems
 - Any overtime could not be accomplished during normal business hours.
 - The costs are the minimum necessary to obtain facilities comparable to those presently in use.

Phase 1 – Planning Internal Labor Rates, cont'd

Example: The Veegoo County Communication Director's annual salary is \$62,000/year.

Hourly Rate = \$62,000 / 2080 hours/year = \$29.81/hour Overhead rate for facilities and benefits = 35%

Labor Rate = $$29.81 \times 1.35 = $40.24/hour$

These calculations must be documented and are subject to audit by Nextel and the Transition Administrator



Phase 1 – Planning While we're on the topic of audits

- Everything we do is subject to an audit.
- The records you are required to keep are probably foreign to your normal operations.
- No records = no compensation from Nextel.
- Delegate and empower a "Records King".
- Records to keep:
 - Timesheets include brief task description
 - Internal Labor Rate calculations/justification
 - Travel & living expenses
- Read "After You've Entered into the FRA" prepared by Schwaninger & Associates; copy provided

Phase 1 – Planning Motorola / EF Johnson Quotes

- The actual retuning/reprogramming of the State of Indiana's site and user equipment will be performed by Motorola and EF Johnson and their certified shops.
 - Liability and Warranty issues
- User agencies can choose to use these vendors, another radio shop that they trust, or reprogram the radios themselves.
 - We just need to know your choice



Phase 1 – Planning Coverage Testing

- Coverage tests will be performed to provide pre- and posttransition quantifiable data.
- During Planning Phase we will develop the test routes to be driven (walked for DOC systems).
- Your input is needed for areas where coverage is marginal.
- The coverage probably won't improve post-transition, but we don't want it to degrade.



Phase 1 – Planning Frequency Analyses/FCC Licensing

- Two potential interference issues post-transition:
 - Co-channel and adjacent channel interference.
 - Intermodulation within the site.
- Combination of Engineering Analyses and Site evaluations will be performed to identify problems and fix them before actually revising the FCC Licenses.
- Once the new frequencies are deemed acceptable the FCC License modifications will be prepared.



Phase 1 – Planning Transition Cost Compilation

- Inputs from Inventory, Labor Rates, Motorola/EF Johnson quotes, Coverage Testing, and Frequency Analysis planning tasks are compiled.
- Costs, schedules, and deliverables for actual transition assembled into Transition Plan document.
- Once reviewed and approved by the State of Indiana, Transition Plan submitted to the Transition Administrator and Nextel to begin negotiations.
- Actual migration to new channels will begin once the Frequency Relocation Agreement (FRA) is executed between the State of Indiana and Nextel.



Phase 2 - Transition

- 1. Submit Licensing Package to FCC.
- 2. Perform pre-transition coverage tests.
- 3. Reprogram user equipment.
- 4. Reprogram site equipment.
- 5. Perform post-transition coverage tests.
- 6. Acceptance testing.
- 7. Process Acceptance Letter.
- 8. Nextel/FCC/TA Audit.



Phase 2 - Transition Submit Licensing Package to FCC

- Immediately after the FRA is executed the Licensing Package will be electronically submitted for coordination and approval.
- Before transition can occur, FCC license modifications must be approved by the FCC.



Phase 2 - Transition Regional Approach to Transition

- Regional approach will be taken for transition of Statewide System
 - Indiana divided by site controllers
- Perform pre-transition coverage tests
- Flash new software and program new channels in subscriber units
 - Keep old channels programmed into subscriber units
- Program new channels into site controllers
- Verify system communications
- Perform post-transition coverage tests
- Move to next region
- Acceptance testing of complete system



Phase 2 – Transition Perform Pre-Transition Coverage Tests

- Must compile quantitative data for pre-transition coverage
 - Proof of "comparable facilities"
 - Liability issues
- Drive tests, "can you hear me now", gather signal strength data.
 - Must tell us where you are having coverage issues now to ensure these areas are captured during the drive tests
- Foliage and weather conditions must be comparable for pre and post tests



Phase 2 – Transition Reprogram Subscriber Equipment

- New software must be loaded into each subscriber unit to ensure compatibility with transition process. (applies to Motorola and EF Johnson units)
- Once new software is loaded, new channels are programmed into subscriber unit, keeping old channels in the unit.
 - This allows continued operations on old channels while new channels are programmed into the site equipment.
- If subscriber units are to be replaced (extremely small percentage), Nextel will provide new units and they will be installed with the old and new channels already programmed.
- For dual-programmed units, State of Indiana will take care of Indiana channels. Other channels licensed to the city/county are the responsibility of that agency.

Phase 2 – Transition Reprogram Site Equipment

- After all subscriber equipment has been reprogrammed and each subscriber agency approves proceeding, site equipment for that region will be reprogrammed with new channels.
- Coordinated and controlled process (V&V; verification and validation) to ensure communications are maintained throughout.
- Redundant systems are an option.



Phase 2 – Transition Post-Transition Coverage Testing

- Post-transition coverage testing performed over same drive routes as pre-transition testing
- Separate teams perform drive tests while reprogramming teams move to next region
- Pre and post coverage data compared to determine if "comparable facility" is achieved.



Phase 2 – Transition Acceptance Testing

- Acceptance Test Plan (ATP) will be performed after regional coverage testing is completed.
- ATP will verify that network performs properly
- State of Indiana required to sign a Completion Certification that certifies to the TA that:
 - original 800 MHz frequencies have been relinquished
 - system is reconfigured to operate on the replacement frequencies;
 - work required to reconfigure facilities to operate on the replacement frequencies has been satisfactorily completed
 - the State of Indiana and Sprint Nextel have agreed to the sum paid by Sprint Nextel for such work.
- Sprint Nextel will forward all closing documentation to the TA for review, and the TA will register the reconfiguration as complete.



IPSC Rebanding Process Action Items

- 1. Assign a single point of contact for your agency.
- 2. Determine who you want to perform your inventory.
- 3. Determine who you want to reprogram your radios.
- 4. Assign a "Records King" to maintain your financial records.
- 5. Complete the "Agency Point of Contact Form"

Indiana Integrated Public Safety Commission Rebanding Legal/Contract

Robert Schwaninger
President
Schwaninger & Associates



- FCC appointed a committee to select a "Transition Administrator" (TA)
 - "BearingPoint Team" approved by FCC
- TA Responsibilities:
 - define schedule
 - define process
 - collect and review Incumbent Licensee transition plans
 - mediate between Incumbent Licensees and Nextel
 - cause payments to occur from Nextel to Incumbent Licensees
 - obtain signoffs from Nextel and Incumbent Licensees upon completion of transition



Schedule

- TA was given 30 days to provide FCC with schedule for band reconfiguration by NPSPAC Region
 - all systems must commence reconfiguration within 30 months and all systems must complete reconfiguration within 36 months of the release of an FCC Public Notice announcing the start date for the first NPSPAC Region
 - 30 days prior to the start date for a specific region the FCC will issue a Public Notice initiating a three month voluntary negotiation period between Nextel and relocating incumbents

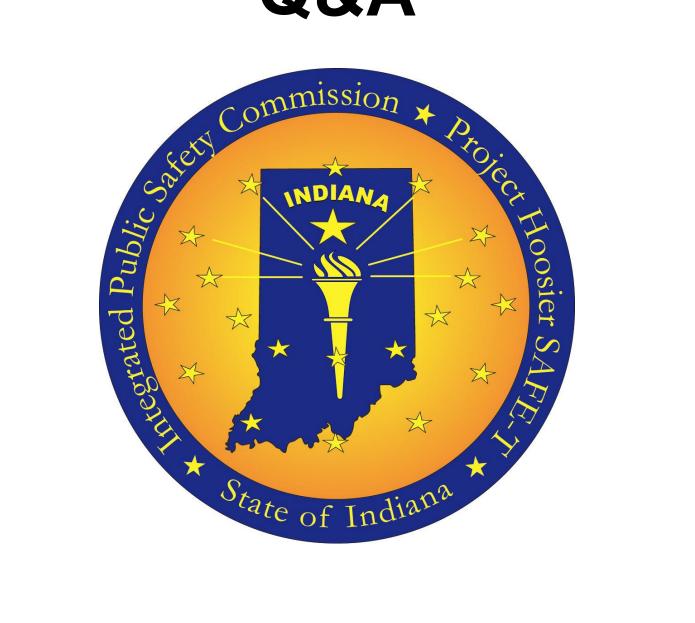
- Nextel will pay for all reasonable costs of transition to a "comparable facility" defined as:
 - "those that will provide the same level of service as the incumbent's existing facilities, with transition to the new facilities as transparent as possible to the end user.
 Specifically, equivalent channel capacity, equivalent signaling capability, baud rate and access time, coextensive geographic coverage, and operating costs" (FCC R&O 04-168)

• FCC

- "our ultimate conclusion is that achieving satisfactory interference abatement will require both band reconfiguration and application of Enhanced Best Practices" which "will play a vital role in protecting the integrity of public safety communications during the transition period to a new 800 MHz band plan and after reconfiguration is complete."
- "locating public safety channels in the lower portion of the band—as far as possible from the ESMR and cellular channels—would provide significant relief from interference on the public safety channels. However, it still leaves open the possibility that ESMR and cellular channels, separated from public safety channels by as much as ten megahertz, could mix in the first stage of the public safety radio and form an intermodulation product—that could fall within the channel the public safety radio is tuned to. Under this scenario, if the two ESMR and cellular signals are strong enough, and the radio does not have good intermodulation rejection capability, interference could still result."
- Interference may still occur even after the transition



Q&A



Contacts/Links

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IPSC 800 MHz Website

http://www.in.gov/ipsc/safe-t/800MHz/update.html

